International Journal of Teaching and Learning in Higher Education 2012, Volume 24, Number 2, 134-143
http://www.isetl.org/ijtlhe/ ISSN 1812-9129

Problem-Based Learning in the Educational Psychology Classroom: Bahraini Teacher Candidates' Experience

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There was a concern from faculty at Bahrain Teachers' College that undergraduate Bahraini students lack the necessary competencies needed for success in educational contexts that are conducive to active, student-centered learning. It was decided that the students be introduced to a problem-based learning (PBL) strategy in one of their educational psychology courses to encourage more active learning on their part. PBL is a strategy through which students learn course content by analyzing and solving real-life problems related to the course, and in Bahrain it is a strategy that is seldom, if at all, applied in classroom contexts other than those of the medical sciences. In this sense, the current study was somewhat unique and it focused on exploring the effects of, and the students' reactions, to PBL. In it, observation, monitoring of students' performance, and students' personal reflections and group presentations were utilized as the main assessment instruments. Results indicated a high satisfaction rate with PBL, as well as improved learning outcomes in the educational psychology classroom, with the development of competencies that are more in line with what is needed for solid professional teaching practice. The results also suggested interesting implications related to teacher preparatory colleges and educational reform.

Bahrain Teachers' College (BTC), a professional teacher preparatory institution in the island Kingdom of Bahrain in the Arab Gulf region, offers a Bachelor Degree (B.Ed.) program in which students enrolled are required to fulfill both theoretical modules as well as teaching practicums. Its students are high school graduates mainly from the public school system and are admitted to BTC only after passing a somewhat rigorous selection process. Despite this fact, though, many BTC students in their first year of study are found to be, in general, weak in terms of competencies needed for good performance at a professional college. One such competency is the ability to proficiently apply theory learned in the classroom to address problems that may arise in real-life situations.

Although most students are able to recite facts from memory in relation to key concepts studied, when tested to form relationships or to utilize their knowledge base in the form of applications, many get completely muddled. Even when they are shown how to solve a particular problem or how to apply a certain concept, usually all they are able to do is to repeat that specific solution when provided with a new problem or situation unfamiliar to them. They are not able to come up with their own answers or explanations to such problems, a skill that happens to be extremely crucial for the proper understanding of any college course, and an educational psychology course in particular, in which they as teacher candidates are challenged to analyze realistic case studies in light of the course content presented. In brief, the students appear to have mainly a surface-learning approach in contrast to a deep-learning one, which involves critical analysis, the linking of ideas and concepts, creative problem solving, and application (Harvey & Kamvounias, 2008). The students also display little motivation to read and search for information on their own. They prefer sticking to the notes handed down to them by their instructor and usually refrain from doing the required readings assigned to them, using as a main excuse their poor English language proficiency which, as they claim, turns their reading assignments into horrendous time-consuming tasks.

Background and Purpose of the Study

The student weaknesses identified above led the researcher to question their source: could they be due to the innate intellectual traits of Bahraini students or are they the result of the traditional education system implemented in the public schools of the Arab Gulf, in general, and of the Kingdom of Bahrain in particular? For in these public schools, students receive what Paolo Freire (2003) called "the banking education'' (i.e., direct instruction), which tends to focus mainly on rote learning and memorization instead of on active engagement, critical thinking, application, and discovery-learning. It is precisely this type of education that the current national educational reform project in Bahrain is trying to abolish through a number of initiatives among them the establishment of BTC, which has as one of its main goals the introduction of instructional methodologies like the one described in this paper that go beyond the traditional delivery of content and that encourage instead the establishment of educational contexts that are conducive to active, student-centered learning.

There is little but convincing evidence to support the view that Arab Gulf students' tendencies to rote learn are most probably due to the educational environment in which learning happens rather than to the innate characteristics of the students. If this is the

case, then it appears that educational contexts that are conducive to interactive, student-centered learning will promote deep-learning approaches and will help in the development of competencies that are more in line with what is needed for solid professional teaching practice.

Al-Shaibani, Sachs-Robertson, Al Shazali, and Sequeira (2003) have suggested in a study that they conducted on entry level medical students at the Arabian Gulf University in Bahrain that when a problem-based learning (PBL) strategy is used for curriculum planning and implementation, Gulf students and most of them Bahraini are capable of analyzing problems, identifying learning issues, integrating new information, and arriving at an understanding or resolution of the problem. PBL is a strategy through which students learn course content by analyzing and solving real-life problems related to the course. In fact, Al-Shaibani et al. (2003) argue that the trend observed in their study in terms of students' ability to identify learning issues and objectives is similar to that reported from various other PBL schools from different parts of the world (e.g., the Netherlands and different parts of the USA). In a study on high school graduates at the English Language Center of the University of Bahrain, Al-Ahmed (2000) found that when an Organized Career Orientation course was offered through the use of multimedia technology in an educational environment in which students were responsible for their own learning and progress, Bahraini students were capable of achieving the course objectives of note-taking, analyzing dialogue accurately, answering questions, problem solving, and writing reports more positively than when conventional teacher-centered methods of instruction were used. Kassab, Abu-Hijleh, Al-Shboul, & Hamdy (2005b) have shown in a study, which they conducted on medical students at the Arabian Gulf University in Bahrain, that when given the opportunity to act as tutors in a problem-based learning setting, Gulf students, and most of them Bahraini, were able to provide better feedback than faculty tutors and to show more cognitive congruence with peers in the tutorial group. The study also confirmed that there were no differences in performance on written and practical examinations between students tutored by peers and students tutored by faculty. The only noteworthy difference is that student tutors tended to focus more on skills that do not require content expertise and showed deficiencies in skills that require content experience. Still, there were no significant differences in all the other items in the evaluation process, namely in stimulating elaboration, directing the learning process, stimulating integration, and stimulating student interaction. Bahraini students, therefore, in such a student-led setting and through their active function as tutors, were able to demonstrate the important attributes of leadership, interpersonal communication, teamwork, evaluation, and feedback skills.

In summary then, the little evidence found in the literature seems to indicate that Bahraini students generally are capable of a deep-learning approach and one similar in tendency to that of other students in the world. What is essential, however, is the effect of the educational environment or context they are in. According to Biggs and Telfer (1987), four features are crucial for an educational program to promote a deep-learning approach, and these are a suitable motivational context, a high degree of learner activity, learner interaction with peers and teacher, and a well-structured knowledge base. The driving force behind the study at hand, therefore, was to tackle the question: What happens when the educational context of an undergraduate course offered at a professional college such as BTC is changed from being mainly a direct instruction class to an interactive PBL one? PBL was chosen in particular because of the fact that it can provide learners with an immersion experience whereby they learn a certain content area through direct engagement in realistic problems. In other words, it provides a context which does not only promote deep learning but also fits perfectly into the active, student-centered learning model that BTC is trying to enforce because of the high degree of active engagement this approach requires on the part of the learner. Besides, PBL was at the time an approach that the study's participants had not yet been exposed to previously, and so this added to the investigator's curiosity about the effects of such an approach on first-time users.

What made this study somewhat unique was the fact that PBL in Bahrain has been usually applied only in medical science courses and its benefits have been amply substantiated in the medical field but not in other disciplines, while this study tried to apply it in an educational psychology class called Developing Thinking in Children. The field of educational psychology was chosen not only because it is the researcher's area of specialty, but also because of its propensity to provide a multiplicity of opportunities for applying PBL through the different case studies the students are presented with and required to tackle and analyze. The purpose of the current study thus was threefold: (1) to encourage more active and independent learning on the part of the students by implementing an in-class PBL strategy designed to develop their deep-learning skills; (2) to assess the effectiveness of such a strategy in enhancing not only learning but also application of educational psychology key concepts and theories covered in their course content; and (3) if it is found to be sufficiently effective, to suggest ways of widening the scope of implementation of such a strategy, in the hope of making it reach the Bahraini

public schools, so as to promote best practices in education from the lower grades.

Conceptual Framework

Conceptually, this study was guided by Stephen Corey's (1953) view of research as a tool for making better school decisions and for implementing more effective educational practices. It was also based on the theoretical outlook of valuing active learning strategies in education, in general, and PBL, in particular, and acknowledging the role these strategies play in promoting deep learning. It was also supported by John Biggs's (1987) formulation of a deep approach to learning as leading to improved student learning outcomes.

Materials and Methods

This qualitative research study was conducted in the third and fourth weeks of the second semester of the 2009-2010 academic year. The qualitative method was chosen for a couple of reasons. First, the study was mainly trying to answer a "how" question by attempting to assess the effectiveness of PBL and how it can be more widely implemented, and it was trying to do so through examining the behaviors and perspectives of the participants. Second, the sample of participants available for study was extremely small and not sufficient for generating a quantitative research analysis as opposed to a qualitative one. The study was conducted at BTC in an educational psychology class of 24 freshman students, six females and 18 males, all of whom are Bahraini teacher candidates. They participated in the study only after giving their consent to do so. For the sake of anonymity, pseudonyms were used in this paper for some of the student participants where there was a need to refer to their individual cases. The participants were non-randomly selected since they were the researcher's class of students. They were also non-randomly assigned to four different groups of six members each, with one or two female participants in each group, to ensure gender-mixing. Since the researcher had taught the participants in an earlier semester, it was feasible to ensure academic homogeneity among their groups by placing students of diverse academic abilities in each group. Each group was provided with:

- a written hypothetical case study or scenario constructed by the course instructor herself, to ensure that the learning outcomes to be met came into sharp focus;
- a list of suggested learning resources or materials;
- a handout explaining the steps of the PBL process;
- a list of the learning outcomes to be *achieved* (both PBL-specific learning outcomes as well as content-specific learning outcomes);
- a handout describing the role played by the course instructor as well as the role played by each PBL group member (i.e., chairperson, scribe, tutor, and member);
- and an electronic template on which to record the main information and data given in their particular scenario, the information missing which they needed to find out, their plan of action, the problem(s) presented in the scenario, their analysis of the problem(s), their proposed explanations and solutions for the problem(s), their conclusions, and finally their reflections on the whole PBL experience. The rationale behind the template was to help the students keep track of their work and progress and to use it as a platform for a presentation they were required to give to the whole class in the end of the assignment.

The PBL approach was implemented by the participants in a two-week long classroom assignment when the conceptual focus of the course was on creative thinking and creativity in the classroom. The PBL case studies given to the students revolved around situations in which the lack of creativity and creative thinking was the main source of the problems embedded in the scenarios. Through the PBL process, the students in each group were supposed to be able to identify the main aspect(s) of creative thinking that were lacking and leading to the problem(s) in their scenario and then to suggest creative solutions to that/those problems. In this study, three main qualitative research instruments were used for data collection. They are as follows:

- A rating form (Table 1) was used during the observation of the different groups, to assess students' performance (e.g., skills, behaviors, and interactions) during the PBL process. This form consisted of six main criteria: teamwork, communication, planning, engagement, information processing, and critical thinking. Note that the selection of these criteria was based on the desired learning outcomes to be achieved and was inspired by the research done by Kassab, Abu-Hijleh, Al-Shboul, & Hamdy (2005a) in their study of gender-related differences in student-led PBL tutorials as well as the research of Holen (2000). Every criterion was broken down into a number of component skills/behaviors, each of which was rated on a scale of 1-3 where 1 represented *not satisfactorily demonstrated*, 2 represented

Table 1
Rating Form Used During Observations

Criterion	Skills/Behaviors Exhibited	Rating	Comments
Teamwork	The member of the group:		
	• Works well with the team.	1 2 3	
	• Feels a sense of connection and loyalty to group members	1 2 3	
	• Counts on other group members for help and support	1 2 3	
	• Fulfills his/her designated responsibilities in the group	1 2 3	
	• Enjoys working with the group	1 2 3	
Communication	The member of the group:		
	• Shares ideas and information with others	1 2 3	
	• Expresses ideas clearly	1 2 3	
	• Seeks and welcomes ideas and opinions from others	1 2 3	
	• Keeps an open mind about new ways of doing things	1 2 3	
Planning	The member of the group:		
	• Helps in defining and setting goals	1 2 3	
	• Contributes to the development of a clear plan of action	1 2 3	
	• Focuses time and efforts on achieving set targets	1 2 3	
	• Learns from mistakes and tries to correct them	1 2 3	
Engagement	The member of the group:		
	• Is attentive	1 2 3	
	• Shows interest in the work	1 2 3	
	• Actively participates in the work	1 2 3	
	• Portrays a responsible attitude towards the work	1 2 3	
Information Processing	The member of the group:		
	• Utilizes relevant content information	1 2 3	
	• Resorts to a variety of resources in this/her work	1 2 3	
	• Makes accurate ties and connections between different conceptual information	1 2 3	
Critical Analysis	The member of the group:		
	• Is involved in reading and interpreting content	1 2 3	
	• Asks pertinent questions	1 2 3	
	• Identifies and articulates problems	1 2 3	
	• Formulates useful learning objectives (what is yet to be learned)	1 2 3	
	• Offers logical explanations	1 2 3	
	• Proposes plausible solutions	1 2 3	

Note. Rating Scale: 1 = *not satisfactorily demonstrated*; 2 = *satisfactorily demonstrated*; and 3 = *outstandingly demonstrated*

satisfactorily demonstrated, and 3 represented *outstandingly demonstrated*. During the two-week classroom assignment, this rating form was filled by the primary investigator twice for each student, once in the last session of each of the two PBL weeks.

- Students' reflections about the whole PBL experience were used to determine their reactions to the PBL method and to assess the extent of the learning that took place.
- The group presentations in the end of the PBL assignment were used to assess the quality of students' analyses, planning, and solutions and to assess the extent to which they were capable of applying theory to real-life situations.

Results

Data Collected

The 24 students were assessed with a total of 48 rating forms: two for each student, which were filled by the primary investigator in each of the two rounds. Since the students' performances were evaluated twice,

their scores for each criterion on the rating form were compared on both occasions to detect any noticeable changes in performance between when the students first embarked on the PBL method and after they felt more comfortable with it. Table 2 displays the general findings on each occasion (Round 1 and Round 2) in terms of numbers and percentages. Below is an interpretation of the findings.

Interpretation of the Findings

Teamwork

The majority of students satisfactorily and outstandingly demonstrated teamwork skills in both rounds (91.7% in both rounds). Only two did not show satisfactory teamwork skills. These were Nada and Ahmad. From Nada's reflections, it was discovered that her lack of teamwork was a result of her feeling of discomfort due to having been the only female in her group. Despite the fact that the males in her group tried to make her feel welcome, she just could not get herself to relax sufficiently enough to demonstrate satisfactory teamwork skills. In the case of Ahmad, the issue was quite different. From observations of him before and during the PBL experience, it was noticed that he seems to have motivational difficulties when it comes to any type of learning, be it that of lecturing, or discussions, or group work, etc. His unsatisfactory teamwork skills therefore were mainly due to his disinterest in learning rather than being a result of the task at hand.

Communication

The majority of students satisfactorily and outstandingly demonstrated communication skills in both rounds (79.1% and 91.6% in Round 1 and Round 2 respectively). Actually, the percentages show a considerable increase in communication among the students from Round 1 to Round 2. Only two students failed to satisfactorily communicate in both rounds and these were Ahmad and Hamad. In the case of Ahmad, again it was his lack of motivation and interest in learning, while, in the case of Hamad, he may have not communicated sufficiently due to being naturally shy and reserved. This is the only plausible explanation for his behavior, based on the observations done prior to and during the PBL experience, and also based on his reflections, in which he mentioned that he would have liked to be more expressive in his group but just tended instead to listen in on the group's discussions. Nada was among the three students who had moved from displaying unsatisfactory communication skills in the first round to displaying them satisfactorily in the second round. Her reflections mentioned that she was in the second round a little more willing than in the first round to speak to her group members when prompted or when asked a question; however, she was still not comfortable enough to herself initiate any conversation or to share information and ideas on her own.

Table 2
Findings on Each Occasion

Criterion	Evaluation	Number and % of students Outstandingly Demonstrating the Criterion	Number and % of Students Satisfactorily Demonstrating the Criterion	Number and % of Students Not Satisfactorily Demonstrating the Criterion
Teamwork	Round 1	12 (50%)	10 (41.7%)	2 (8.3%)
	Round 2	16 (66.7%)	6 (25%)	2 (8.3%)
Communication	Round 1	11 (45.8%)	8 (33.3%)	5 (20.8%)
	Round 2	17 (70.8%)	5 (20.8%)	2 (8.3%)
Planning	Round 1	13 (54.2%)	6 (25%)	5 (20.8%)
	Round 2	18 (75%)	3 (12.5%)	3 (12.5%)
Engagement	Round 1	15 (62.5%)	6 (25%)	3 (12.5%)
	Round 2	18 (75%)	5 (20.8%)	1 (4.2%)
Information Processing	Round 1	12 (50%)	8 (33.3%)	4 (16.7%)
	Round 2	13 (54.2%)	8 (33.3%)	3 (12.5%)
Critical Analysis	Round 1	15 (62.5%)	3 (12.5%)	6 (25%)
	Round 2	13 (54.2%)	7 (29.1%)	4 (16.7%)

Planning

The majority of students satisfactorily and outstandingly demonstrated planning skills in both rounds (79.2% and 87.5% in Round 1 and Round 2, respectively). Actually, the percentages show a considerable increase in planning among the students from Round 1 to Round 2. Only three students (i.e., Ahmad, Hamad, and Rakan) did not show any improvement from Round 1 to Round 2. In the case of Ahmad, again this appears to go back to his lack of motivation; in the case of Hamad and Rakan, the only plausible explanation is that they tend to be more of followers and tend to let the other members in their group take control of deciding the steps to be taken and what is to be accomplished and when. This is especially because both were in groups that had several highly interactive students in them. Actually, Hamad somewhat refers to this in one of his reflections by saying:

> I am a member in a creative group which always tries to do its best. They (meaning his group members) are more interactive than I am and they help me understand the scenario better and how to complete the work.

Engagement

The majority of students satisfactorily and outstandingly demonstrated engagement in both rounds (83.3% and 87.5% in Round 1 and Round 2, respectively) but more students demonstrated outstanding engagement in Round 2 than in Round 1. Rakan and Nada moved from not satisfactorily being engaged in Round 1 to being satisfactorily engaged in Round 2. Only Ahmad did not show any improvement and was unsatisfactorily engaged in both rounds.

Information Processing

The demonstration of outstanding or of satisfactory information processing skills did not change much from Round 1 to Round 2 on the part of the students. Only two students (i.e., Majed and Kamal) improved from their level of information processing in Round 1 to the higher level in Round 2: Majed from not satisfactorily demonstrating to satisfactorily demonstrating and Kamal from satisfactorily demonstrating to outstandingly demonstrating. Majed's and Kamal's improvement in information processing may have been due to feeling a greater sense of comfort with the scenario after having gone through it with their groups in the first week. Three students (Ahmad, Hamad, and Rakan) did not show any improvement at all from Round 1 to Round 2.

Critical Analysis

The most significant differences were noticed in the case of two students, Nada and Majed, who moved from non-satisfactory critical thinking in Round 1 to satisfactory in Round 2. Four students did not show any improvement from their non-satisfactory level in Round 1 to Round 2 and these are: Ahmad, Hamad, Rakan, and Nabeel. Very few students regressed from outstanding demonstration of critical thinking skills in Round 1 to only satisfactory demonstration in Round 2. This may have been due to having completed in their group most of the required interpretations of the scenarios in the first round and not having had much analysis left to do in the second round.

Discussion

The two rounds of evaluation showed overall a high degree of teamwork, communication, planning, information processing, and critical thinking on the part of the students. Actually, there was an increase mainly in communication and planning throughout the PBL process. The first part of the purpose of this study, which was to encourage more active and independent learning, was thus fulfilled. The students' personal reflections showed more supporting evidence that this active and independent learning took place, and from them three main themes emerged, which are students' active engagement, students' feelings and attitudes, and student learning.

Students' Active Engagement

The students reported being actively involved in a number of tasks like, reading, note-taking, research, analysis, explanation, discussion, critical thinking, problem-solving, and decision-making. They also mentioned playing the role of both student and teacher in addition to referring to the task of working with members of the opposite sex, something that they were not used to because of their gender-segregated high schools. A couple of quotes from Sameer's and Mayssa's student reflections fit well here as examples. Sameer stated, "I enjoyed the PBL experience because I felt one gets to be the learner and the teacher at the same time. I will for sure use this method in my teaching." Mayssa said,

> It was the first time I work with boys and what I got to notice is that they are better than girls because we got to talk about work only. Besides, I got to know about them more, not only their funny side, but also their serious personality.

Students' Feelings and Attitudes

Almost all of the students reported positive feelings towards the PBL experience: feelings like enjoyment,

higher self-confidence, higher self-esteem, and a sincere intention to implement the PBL approach in their classrooms in the future. Again, Sameer's previously mentioned quote is a good example here, for he expresses both enjoying the PBL experience as well as intending to use it in his future classroom. Huda's quote is also a good example, for she makes a strong statement: "What I got from this experience is that I can still be accepted and respected by others even if I make mistakes."

Student learning

Among the skills the students reported learning were the following: to work hard, to help others, and to better solve problems. A good example here is Mehdi's quote, "I have learned from this experience how to generate and evaluate possible solutions to a problem through analysis, discussion, and brainstorming." Another example is Murad's quote: "I learned from this experience that one should work hard and should help the weaker students in his group." In addition, Waleed says, "I have learned that I should be able to solve problems when I am in a difficult situation and that flexibility is needed in problem-solving." Also, Samya states, "I learned that cooperation is strength, respect, exchange of views, and togetherness." The students also reported gaining insight about how to deal with their own students when they become teachers. The best example in this context is Karima's quote:

> From my work with the group, I learned that in my future career, I will take the students' efforts into consideration and will give them a chance to correct their mistakes just like we were doing with each other during our group discussions.

We can safely conclude from the reflections cited above and from our own observations of the students in action, that the PBL activity provided the students with opportunities to develop not only cognitively and intellectually, but also socially and emotionally, since they at least had the opportunity to learn the following:

- to cooperate as a team,
- to deal with students of different genders,
- to respectfully exchange ideas and views,
- to help each other,
- to gain a sense of acceptance in a group and to feel valued by others,
- to give others a chance to correct their mistakes,
- to concentrate on effort,
- to analyze and brainstorm,
- to approach problems and figure out and plan what is needed for solving them,
- to generate and evaluate solutions for problems, and
- to experience how to be responsible for their own learning.

Through the PBL process, a few of the researcher's concerns were also addressed, mainly (1) the lack of student motivation to read and search for information on their own, and (2) students using poor English language proficiency as an excuse not to read or get assignments done. It was obvious from the process that the students were involved in reading and translating the scenarios as well as other relevant materials, searching for missing information, analyzing what is read and understood, and finally expressing their knowledge, problems, and solutions in their own words through their presentations. Their active involvements, as well as their ability to overcome their lack of motivation to read and their language limitations, were probably due to the fact that the starting point in PBL is a problem or a puzzle that challenges the students and arouses their curiosity (Dixon, Lam, Lam, & Ho, 1996). PBL, therefore, has more of a game's nature, and this helps students become excited about their learning.

As regards the second part of the purpose of this study, which was to assess the effectiveness of PBL in enhancing the learning and application of educational psychology concepts and theories in general, and of creative thinking and creativity in the classroom in particular, supporting evidence of this method's effectiveness was obvious mainly through the students' presentations. Through their presentations, the students demonstrated their ability to detect specifically which components of creativity identified by Ellis Paul Torrance (1962) were lacking and thus acted as the main source of the problem embedded in each scenario. Being able to detect such components would not have been possible without profound understanding of the creative process in general and of all the four characteristics essential to that process, which are fluency, flexibility, originality, and elaboration (Torrance, 1962). It would also not have been possible without the students understanding the main difficulties impeding creativity like environmental cues, time, emotional states, lack of knowledge, and extrinsic motivation. Understanding all of these theoretical concepts and ideas alone on the part of the students, however, would not have been sufficient for the task of discovering the problems in the scenarios and/or their sources; what was needed in addition was the establishment of a link between them and the real-life situations talked about in the scenarios, which the students were successfully able to do. The students also

demonstrated their ability to come up with plausible, and in some cases creative, solutions to those problems. Their solutions required from them to place themselves in the shoes of the main characters in their scenarios and, thus, become more aware of what they were going through: their reactions, strengths, and limitations, etc. In addition, they had to imagine what would work in their situation and what would not and then select the best of all the possible options available to them in light of what they knew about creativity. What this means, therefore, is that the students had not only to think about how to utilize the theoretical knowledge and information which they acquired through their readings, but also to go a few steps higher in their thinking: they had to engage in the metacognitive skill of self-regulation. Self-regulation is the process of actively engaging in the setting of goals and in behaviors that lead to the achievement of those goals (Edens, 2008/2009). It also involves several processes such as planning, attention control, and solicitation of help when needed (Ryan, Pintrich, & Midgely, 2001). Through the employment of self-regulation, the students were able to evaluate thinking strategies and ideas, decide on a certain strategy and when to apply it in their problem-solving process, and understand the rationale for the use of that particular strategy. Sifting through strategies and ideas to glean the best of them (i.e., evaluating them) is considered by many teachers as a fifth characteristic of creativity to be added to the four accepted ones of Torrance. (Healy, 1994) If this is true, then this means therefore through the PBL process, in addition to tackling problems related to the conceptual focus of creativity, that the students themselves were practicing creativity in one of its many definitions, mainly its definition as the ability to approach problems in any field from fresh perspectives (Healy, 1994).

In light of all this, it is safe to say that through this study, PBL was found to be sufficiently effective as an instructional tool and notably successful in the educational psychology classroom. There is no reason, therefore, to limit the scope of such a strategy to the medical science disciplines, as has traditionally been the case in the Bahraini context. Instead there should be reason to widen the scope of implementation of such an effective strategy, to make it reach the Bahraini public schools that have been for the longest time mainly engrossed in depositing students with information and treating them as passive banks who receive, file, and store deposits, as Paulo Freire (2003) would describe it. Actually, there is every reason to apply such a strategy and many other active learning strategies like it in such schools in Bahrain and elsewhere, given the quality of students graduating from them and the lack of necessary competencies they bring to the table when they enroll in college. The question here, however, is this: Are Bahraini public schools prepared to apply such strategies in their classrooms? In other words, do Bahraini public school teachers possess the mindset and training needed for implementing such strategies? The fact that the public schools continue to primarily practice direct instruction indicates lack of training and preparation on the part of their teachers. A need, therefore, exists to provide these teachers with the necessary training, and this is where the role of a college such as BTC comes in as a key player in the national educational reform project currently underway in the Kingdom. The training can consist of a variety of workshops to be held in the teachers' schools in addition to the Continuing Professional Development (CPD) courses being offered at BTC. The crucial thing is that during the training , the emphasis should not only be on having the trainees try out a certain strategy such as PBL, but also on teaching them how to design PBL activities in the different curriculum areas they teach. This study has demonstrated how PBL can be useful and successful in different disciplines at the college level, and there is clear reason to believe that, just as it can help in promoting best practices in higher education, it can also do so in earlier years of schooling.

Conclusion

The fact that a triangulated data collection approach was used in this study, and that the three research instruments utilized in it resulted in compatible data interpretations, lends some credibility to its findings. What makes its research findings more credible, though, is the fact that when the researcher returned to the participants to try to gain verification of the data interpretations, all the findings were recognized and agreed on by the participants.

In addition to being credible, the results of this study indicate that educational contexts that are conducive to interactive student-centered learning (e.g., the one made available to students in this study) promote deep-learning approaches and help in the development of competencies that are more in line with what is needed for solid professional teaching practice. They also demonstrate that PBL can work successfully in a multiplicity of curriculum areas and disciplines.

These results, in addition, seem to be highly consistent with other research findings that confirm the many benefits of problem-based learning, not only at the college level but at a variety of educational levels, among them high school, middle school, and even elementary school. For example, Holen (2000) has shown that PBL facilitates the acquisition and organization of knowledge as well as the acquisition of several other generic desirable attributes such as communication skills, team work, problem-solving skills, self-directed learning, sharing information,

appreciation of other person's point of view and identification of personal strengths and weaknesses. Brears, MacIntyre, & O'Sullivan (2008) have demonstrated that complexity thinking, meta-cognition, intrinsic motivation, self-directed learning, self-reflection, and collaborative skills are all operationalized within the context of PBL- all of which are skills that are essential in meeting the social and educational needs of a 21st century classroom. Drake and Long (2009) have shown that in addition to having promise in the elementary school classroom, PBL can help students gain expertise in the skills needed for making them lifelong learners – skills like asking good questions, utilizing a variety of resources for finding information, and systematically solving problems. Their study has also indicated that the involvement of the students in an authentic problem, through PBL, keeps them more engaged, which ultimately leads to a greater degree of learning on their part. Belland, Glazewski, & Ertmer (2009) have even studied the possibility of implementing PBL in an inclusive classroom with mainstreamed special needs students and have suggested, as a result of their study, that PBL may increase the motivation and social confidence of such students. Thus, it seems that the sky is the limit in the application of PBL, which strongly confirms one of the main premises of this paper, which is to widen the scope of PBL implementation in the Bahraini context to include a multiplicity of disciplines, educational levels, and schools, especially the public schools.

Strengths and Limitations

Obviously, one of the strengths of this research study is to be found in the implications it makes for improving the future of Bahraini schools and any other types of schools that happen to be in a similar context or state of affairs. Another point of strength lies in its uniqueness, for it most probably is the only study in Bahrain addressing PBL in a non-medical context, and precisely in teacher education and classroom practice, which are two areas in which PBL is still in its infancy and largely unexplored. That being said, however, this study was not free of limitations, for the sample of students studied was small, and thus, different findings may have been obtained, or better generalizations made, with a larger or more diverse sample. Furthermore, the group of students studied was, in general, a highly motivated one to begin with, and, therefore, the positive results arrived at in this study may have been in part due to the students' motivation more than being due to the PBL strategy itself. Thus, further research will be important in confirming the promise of PBL as an effective teaching/learning experience in education and classroom practice.

References

Al-Ahmed, F. H. (2000). Multi-media input to a foundation ESP course at university level. *British Journal of Educational Technology, 31*(4), 374-376. doi:10.1111/1467-8535.00170

Al-Shaibani, T. A., Sachs-Robertson, A., Al Shazali, H. O., Sequeira, R. P., Hamdy, H., & Al-Roomi, K. (2003). Student generated learning objectives: Extent of congruence with faculty set objectives and factors influencing their generation. *Education for Health, 16*(2), 189-197. doi:10.1080/1357628031000116916

Belland, B. R., Glazewski, K. D., & Ertmer, P. A. (2009). Inclusion and problem-based learning: Roles of students in a mixed-ability group. *Research in Middle Level Education Online, 32*(9), 1-19.

Biggs, J. (1987). *Student approaches to learning and studying*. Hawthorn, Victoria: Australian Council for Educational Research.

Biggs, J. B., & Telfer, R. (1987). *The process of learning*. Sydney, Australia: Prentice-Hall of Australia.

Brears, L., MacIntyre, B., & O'Sullivan, G. (2008). Preparing teachers for the 21st century using PBL as an integrating strategy in science and technology education. *Design and Technology Education: An International Journal, 16*(1), 36-46.

Corey, S. M. (1953). *Action research to improve school practices*. New York, NY: Bureau of Publications, Teachers College, Columbia University.

Dixon, A., Lam, C., Lam, D., & Ho, R. (1996). *Encouraging active learning in the general practice clerkship*. Paper presented at the Problem-Based Learning Interest Group Meeting, Chinese University, Hong Kong.

Drake, K., & Long, D. (2009). Rebecca's in the dark: A comparative study of problem-based learning and direct instruction/experiential learning in two 4th-grade classrooms. *Journal of Elementary Science Education, 21*(1), 1-16. doi:10.1007/BF03174712

Edens, K. M. (2008/2009). The interaction of pedagogical approach, gender, self-regulation, and goal orientation using student response system technology. *Journal of Research on Technology in Education, 41*, 161-177.

Freire, P. (2003). *Pedagogy of the oppressed.* New York, NY: The Continuum International Publishing Group.

Harvey, A., & Kamvounias, P. (2008). Bridging the implementation gap: A teacher-as-learner approach to teaching and learning policy. *Higher Education Research & Development, 27*(1), 31-41. doi:10.1080/07294360701658716

Healy, J. M. (1994, December 1). Testing for creativity requires a clear definition of what it is. *Brown University Child & Adolescent Behavior Letter, 10*(12), 12.

Holen, A. (2000). The PBL group: Self-reflections and feedback for improved learning and growth. *Medical Teacher, 22*(5), 485-488. doi:10.1080/01421590050110768

Kassab, S., Abu-Hijleh, M. F., Al-Shboul, Q., Hamdy, H. (2005). Gender-related differences in learning in student-led PBL tutorials. *Education for Health, 18*(2), 272-282. doi:10.1080/13576280500148577

Kassab, S., Abu-Hijleh, M. F., Al-Shboul, Q., Hamdy, H. (2005). Student-led tutorials in problem-based learning: Educational outcomes and students' perceptions. *Medical Teacher,* 27(6), 521-526. doi:10.1080/01421590500156186

Ryan, A. A., Pintrich, P. R., & Midgely, C. (2001). Avoiding seeking help in the classroom: Who and why? *Educational Psychology Review, 13*(2), 93-114. doi:10.1023/A:1009013420053

Torrance, E. P. (1962). *Guiding creative talent.* Englewood Cliffs, NJ: Prentice-Hall.

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